

Recovery Plan Action Status

Plan Name: Draft Revised Recovery Plan for the Morro Bay Kangaroo Rat (*Dipodomys heermanni morroensis*)

Plan Status: Draft Revision 1

Plan Date: 25-Jan-00

Lead Agency: USFWS

Lead Office: Ventura Fish And Wildlife Office

(805)
644-1766)

Species	Action Priority #	Action #	Action Description	Action Status	Est. Initiation Date	Est. Completion Date	Responsible Parties	Work Type	Labor Type	Action Comments
Morro Bay kangaroo rat (<i>Dipodomys heermanni morroensis</i>)	1	111	Continue captive breeding of Lompoc kangaroo rats at University of California, Berkeley	Complete	Prior to FY 1995	Prior to FY 1995	University of California at Davis, U.S. Fish and Wildlife Service, California Department of Fish and Game	Management: Propagation, Research: Propagation	Contract, Species Expert	
Morro Bay kangaroo rat (<i>Dipodomys heermanni morroensis</i>)	1	112	Continue to conduct research on reproductive behavior of Lompoc kangaroo rats in captivity	Complete	Prior to FY 1995	Prior to FY 1995	U.S. Fish and Wildlife Service, California Department of Fish and Game	Management: Propagation, Research: Propagation	Contract, Species Expert	Included in costs of Task 111
Morro Bay kangaroo rat (<i>Dipodomys heermanni morroensis</i>)	1	113	Expand the number of captive breeding facilities for Lompoc kangaroo rats and Morro Bay kangaroo rats	Obsolete			U.S. Fish and Wildlife Service, California Department of Fish and Game	Management: Propagation	Contract	
Morro Bay kangaroo rat (<i>Dipodomys heermanni morroensis</i>)	1	121	Develop and implement ant predator training for Lompoc kangaroo rats	Obsolete			U.S. Fish and Wildlife Service, California Department of Fish and Game	Management: Depredation Control	Graduate Student	Included in casts of Task 111
Morro Bay kangaroo rat (<i>Dipodomys heermanni morroensis</i>)	1	122	Develop and implement foraging training for Lompoc kangaroo rats	Obsolete			U.S. Fish and Wildlife Service, California Department of Fish and Game	Management: Reintroduction	Graduate Student	Included in costs of Task 111
Morro Bay kangaroo rat (<i>Dipodomys heermanni morroensis</i>)	1	123	Develop techniques for social training for Lompoc Kangaroo rats	Obsolete			U.S. Fish and Wildlife Service, California Department of Fish and Game	Management: Reintroduction	Graduate Student	Included in costs of Task 1111
Morro Bay kangaroo rat (<i>Dipodomys heermanni morroensis</i>)	1	124	Ascertain the development of survival skills of Lompoc kangaroo rats	Obsolete			U.S. Fish and Wildlife Service, California Department of Fish and Game	Management: Reintroduction	Graduate Student	Included in costs of Task 111
Morro Bay kangaroo rat (<i>Dipodomys heermanni morroensis</i>)	1	131	Remove Morro Bay kangaroo rats from the wild	Discontinued	Prior to FY 1995		U.S. Fish and Wildlife Service, California Department of Fish and Game	Management: General	Internal Technical Assistance	The Morro Bay kangaroo rat may be extinct.

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Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	1321	Conduct tissue sampling	Planned			U.S. Fish and Wildlife Service, California Department of Fish and Game	Research: Genetics	Species Expert	The last capture of a Morro Bay kangaroo rat was in 1986. None were captured during efforts from 2008 to 2011..
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	1322	Conduct mitochondrial DNA analyses on Morro Bay kangaroo rats	Planned			U.S. Fish and Wildlife Service, California Department of Fish and Game	Research: Genetics	Species Expert	We may do this if we can find an extant population.
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	1323	Survey historical mitochondrial DNA variation in Morro Bay kangaroo rats	Complete	FY 1995 - FY 1999	FY 2000 - FY 2004	U.S. Fish and Wildlife Service, California Department of Fish and Game	Research	Contract	
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	1324	Survey nuclear DNA variations in Morro Bay kangaroo rats	Planned			U.S. Fish and Wildlife Service, California Department of Fish and Game	Research: Genetics	Species Expert	This may be done if we can locate an extant population.
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	1325	Conduct microsatellite DNA analysis on Morro Bay kangaroo rats	Planned			U.S. Fish and Wildlife Service, California Department of Fish and Game	Research: Genetics	Species Expert	This may be done if we can locate an extant population.
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	1326	Survey genetic variations in Morro Bay kangaroo rat blood proteins	Obsolete			U.S. Fish and Wildlife Service, California Department of Fish and Game	Research: Genetics	Species Expert	
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	133	Conduct a captive breeding program for Morro Bay kangaroo rats.	Discontinued	Prior to FY 1995		U.S. Fish and Wildlife Service, California Department of Fish and Game	Management: Propagation	Contract	The last Morro Bay kangaroo rat in captivity died in 1993 at the National Zoo.
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	134	Establish at least two additional captive populations of Morro Bay kangaroo rats	Obsolete			U.S. Fish and Wildlife Service, California Department of Fish and Game	Management: Propagation	Contract	
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	141	Gather biological data from captive Morro Bay kangaroo rats	Obsolete			U.S. Fish and Wildlife Service, California Department of Fish and Game	Research	Contract, Graduate Student, Species Expert	included in costs of Task 133
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	142	Train Morro Bay kangaroo rats for reintroduction	Obsolete			U.S. Fish and Wildlife Service, California Department of Fish and Game	Management: Reintroduction	Contract, Graduate Student, Species Expert	Included in costs of Task 133

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Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	15	Secure access to Morro bay kangaroo rats and their habitat	Ongoing Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, California Department of Fish and Game	Research: Population Assessment	Internal Administrative	Over the three years from 2008 to 2011, we will have searched the entire known geographic range and relevant adjacent areas, with exception of four private properties (including Buckskin).
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	21	Estimate the population size of all remaining wild Morro Bay kangaroo rats populations	Ongoing Current	Prior to FY 1995		U.S. Fish and Wildlife Service, California Department of Fish and Game	Research: Population Surveys	Contract	Over the three years from 2008 to 2011, we will have searched the entire known geographic range and relevant adjacent areas, with exception of four private properties (including Buckskin). As of August 2011, we have found no MBKR. The last individual captured was in 1986.
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	22	Collect tissues from newly captured Morro Bay kangaroo rats	Planned			University of California at Davis, U.S. Fish and Wildlife Service, California Department of Fish and Game	Research: Genetics	Species Expert	We may do this if we capture any in the wild.
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	23	Quantify environmental parameters around capture sites	Planned	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, California Department of Fish and Game	Management	Species Expert	We will do this if we locate any extant colony.
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	24	Monitor remaining wild populations	Planned	Prior to FY 1995		U.S. Fish and Wildlife Service, California Department of Fish and Game	Management: Population Monitoring	Species Expert	We will do this if we locate an extant colony.
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	25	Assess microhabitat use at Morro Palisades and Los Osos Oaks	Obsolete			U.S. Fish and Wildlife Service, California Department of Fish and Game	Research: Habitat Requirements	Species Expert	

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Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	26	Determine the social structure and mating system of any remaining wild Morro Bay kangaroo rats	Planned			U.S. Fish and Wildlife Service, California Department of Fish and Game	Management: Population Monitoring	Species Expert	We may do this if we locate an extant colony.
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	27	Synthesize data and develop habitat management protocols	Ongoing Current	Prior to FY 1995		California Department of Parks and Recreation, U.S. Fish and Wildlife Service, California Department of Fish and Game	Management: Population Monitoring	Internal Technical Assistance	We will do this if we locate an extant colony.
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	31	Identify and prioritize habitat acquisition needs	Ongoing Current	Prior to FY 1995		U.S. Fish and Wildlife Service, California Department of Fish and Game	Acquisition: General	Internal Technical Assistance	We will do this if we locate an extant colony.
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	32	Identify and gain access to dispersal corridors	Ongoing Current	Prior to FY 1995		U.S. Fish and Wildlife Service, California Department of Fish and Game	Management	Internal Technical Assistance	Over the three years from 2008 to 2011, we will have searched the entire known geographic range and relevant adjacent areas, with exception of four private properties (including Buckskin).
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	3	331	Incorporate management needs of other sensitive species	Ongoing Current	Prior to FY 1995		California Department of Parks and Recreation, U.S. Fish and Wildlife Service, California Department of Fish and Game	Management	Internal Technical Assistance	We look for other listed species while searching for the Morro Bay kangaroo rat on private land.
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	332	Restore drastically disturbed habitat	Not Started			California Department of Parks and Recreation, U.S. Fish and Wildlife Service, California Department of Fish and Game	Management: Habitat Maintenance and Manipulation	Contract	
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	333	Control exotic plants	Not Started			California Department of Parks and Recreation, U.S. Fish and Wildlife Service, California Department of Fish and Game	Management: Habitat Maintenance and Manipulation	Contract	

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Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	334	Manipulate habitat	Not Started			California Department of Parks and Recreation, U.S. Fish and Wildlife Service, California Department of Fish and Game	Management: Habitat Maintenance and Manipulation	Contract	
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	335	Control competitive and predatory species	Not Started			California Department of Parks and Recreation, U.S. Fish and Wildlife Service, California Department of Fish and Game	Management: Habitat Maintenance and Manipulation	Contract	
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	336	Manage public access	Not Started			California Department of Parks and Recreation, U.S. Fish and Wildlife Service, California Department of Fish and Game	Management: Land Use	Contract	
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	341	Develop monitoring protocol and site assessment criteria	Complete	Prior to FY 1995	Prior to FY 1995	California Department of Parks and Recreation, U.S. Fish and Wildlife Service, California Department of Fish and Game	Management: General	Internal Technical Assistance	
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	342	Develop and update habitat maps	Partially Complete	Prior to FY 1995		U.S. Fish and Wildlife Service, California Department of Fish and Game	Management	Species Expert	We are preparing maps for our own use in preparation for searching for the Morro Bay kangaroo rat. Over the three years from 2008 to 2011, we will have searched the entire geographic range and relevant adjacent areas, with exception of four private properties (including Buckskin).

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Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	343	Monitor the recruitment and recovery of coastal dune scrub species	Obsolete			California Department of Parks and Recreation, U.S. Fish and Wildlife Service, California Department of Fish and Game	Research: Habitat Requirements	Graduate Student	
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	351	Coordinate an interagency management plan	Not Started			U.S. Fish and Wildlife Service, California Department of Fish and Game	Management: Planning	Internal Administrative	
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	352	Develop cooperative agreements with State, Federal, local and private concerns	Obsolete	Prior to FY 1995		U.S. Fish and Wildlife Service, California Department of Fish and Game	Management: General	Internal Administrative	
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	353	Identify preserve boundaries and potential dispersal corridors	Obsolete	Prior to FY 1995		U.S. Fish and Wildlife Service, California Department of Fish and Game	Research: Habitat Requirements	Species Expert	
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	354	Post regulatory and interpretive information	Obsolete			California Department of Parks and Recreation, U.S. Fish and Wildlife Service, California Department of Fish and Game	Other: Information and Education	Internal Administrative	
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	355	Develop land use and land zoning maps	Not Started			U.S. Fish and Wildlife Service, California Department of Fish and Game	Management: Land Use	Internal Technical Assistance	
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	356	Develop maps that identify areas for recovery	Partially Complete	Prior to FY 1995		U.S. Fish and Wildlife Service, California Department of Fish and Game	Management: General	Internal Technical Assistance	We will do this if we locate an extant colony.
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	411	Remove resident Lompoc kangaroo rats and release captive born or translocated Lompoc kangaroo rats into suitable existing habitat	Obsolete			U.S. Fish and Wildlife Service, California Department of Fish and Game	Management: Reintroduction	Contract	

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Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	4111	Determine necessity for food supplementation for released Lompoc kangaroo rats	Obsolete			U.S. Fish and Wildlife Service, California Department of Fish and Game	Research: Reintroduction	Graduate Student	
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	4112	Determine the necessity for providing artificial burrows for released Lompoc kangaroo rats	Obsolete			U.S. Fish and Wildlife Service, California Department of Fish and Game	Research: Reintroduction	Graduate Student	
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	4113	Control predation of reintroduced Lompoc kangaroo rats	Obsolete			U.S. Fish and Wildlife Service, California Department of Fish and Game	Management: Depredation Control	Graduate Student	
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	4114	Control competitors of reintroduced Lompoc kangaroo rats	Obsolete			U.S. Fish and Wildlife Service, California Department of Fish and Game	Management: Predator and Competitor Control	Graduate Student	
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	4115	Control human-caused impacts to reintroduced Lompoc kangaroo rats	Obsolete			U.S. Fish and Wildlife Service, California Department of Fish and Game	Management: Reintroduction	Graduate Student	
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	412	Release Lompoc kangaroo rats into enhanced habitat	Obsolete			U.S. Fish and Wildlife Service, California Department of Fish and Game	Management: Reintroduction	Contract	
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	413	Evaluate the response of reintroduced Lompoc kangaroo rats to habitat manipulations	Obsolete			U.S. Fish and Wildlife Service, California Department of Fish and Game	Management: Reintroduction	Contract	
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	414	Reintroduce captive-born Lompoc kangaroo rats without removing resident LKR	Obsolete			U.S. Fish and Wildlife Service, California Department of Fish and Game	Management: Reintroduction	Graduate Student	
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	415	Monitor reintroduced Lompoc kangaroo rats	Obsolete			U.S. Fish and Wildlife Service, California Department of Fish and Game	Management: Reintroduction	Species Expert	
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	421	Release captive born Morro Bay kangaroo rats into the wild	Obsolete			U.S. Fish and Wildlife Service, California Department of Fish and Game	Management: Reintroduction	Species Expert	

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Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	422	Determine the necessity for food supplementation for reintroduced Morro Bay kangaroo rats	Obsolete			U.S. Fish and Wildlife Service, California Department of Fish and Game	Management: Reintroduction	Species Expert	
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	423	Determine the necessity for providing artificial burrows for reintroduced Morro Bay kangaroo rats	Obsolete			U.S. Fish and Wildlife Service, California Department of Fish and Game	Management: Reintroduction	Species Expert	
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	424	Control predation of reintroduced Morro Bay kangaroo rats	Obsolete			U.S. Fish and Wildlife Service, California Department of Fish and Game	Management: Depredation Control	Species Expert	
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	425	Control competitors of reintroduced Morro Bay kangaroo rats	Obsolete			U.S. Fish and Wildlife Service, California Department of Fish and Game	Management: Predator and Competitor Control	Species Expert	
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	426	Control human-cause impacts to reintroduced Morro Bay kangaroo rats	Obsolete			U.S. Fish and Wildlife Service, California Department of Fish and Game	Management: General	Species Expert	
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	427	Monitor reintroduced Morro Bay kangaroo rats	Obsolete			U.S. Fish and Wildlife Service, California Department of Fish and Game	Management: Reintroduction	Species Expert	
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	2	51	Conduct population viability analysis	Not Started			U.S. Fish and Wildlife Service	Research: Demographic Studies	Species Expert	
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	2	52	Evaluate recovery alternatives	Ongoing Current	Prior to FY 1995		U.S. Fish and Wildlife Service	Management	Internal Technical Assistance	Over the three years from 2008 to 2011, we will have searched the entire geographic range and relevant adjacent areas, with exception of four private properties (including Buckskin). If we locate an extant colony, we will need to decide how to manage it.

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Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	53	Estimate the target population size for recovery objectives	Complete	Prior to FY 1995	FY 2000 - FY 2004	U.S. Fish and Wildlife Service	Management: Planning	Internal Technical Assistance	
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	2	54	Evaluate progress toward recovery	Ongoing Current	Prior to FY 1995		U.S. Fish and Wildlife Service	Management: Planning	Internal Technical Assistance	The Morro Bay kangaroo rat may be extinct.
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	2	61	Conduct interpretation and education programs	Not Started			California Department of Parks and Recreation, U.S. Fish and Wildlife Service	Other: Information and Education	Internal Administrative	
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	62	Encourage public involvement in recovery	Ongoing Current	FY 2007		California Department of Parks and Recreation, U.S. Fish and Wildlife Service, California Department of Fish and Game	Management	Internal Technical Assistance	Many private landowners have given us permission to search on their land for the Morro Bay kangaroo rat in 2008 and 2010. We have been refused permission only for the Buckskin property, in 2008, 2009 and 2010.
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	2	63	Conduct school programs	Obsolete			California Department of Parks and Recreation, U.S. Fish and Wildlife Service	Other: Information and Education	Internal Administrative	
Morro Bay kangaroo rat (Dipodomys heermanni morroensis)	1	70	Develop a funding program	Ongoing Current	Prior to FY 1995		U.S. Fish and Wildlife Service, California Department of Fish and Game	Management: Population Monitoring	Internal Administrative	The VFWO funded searches in 2008 (\$16,000) and 2010 (\$16,000).